



# MENU OF STRATEGIES TO PREVENT CLOSTRIDIUM DIFFICILE INFECTIONS



This tool is intended to help you assess your facility’s current practices for preventing *Clostridium difficile* infection (CDI) and identify areas for creating a plan of action. Using the results of your Prevention Practices Assessment Survey and facility specific knowledge, the strategies menu is a tool to help your facility target areas where action is needed for improvement. This list is not exhaustive or in priority order and strategies should be based on facility-specific risks.

Core prevention strategies (**bolded**) are those with high levels of scientific evidence and have demonstrated feasibility. These are recommended to always be in place.

Inter-facility Patient Transfer			
<b>Reflection Questions</b>	<ul style="list-style-type: none"> <li>• What critical pieces of information need to be communicated during patient/resident transfer?</li> <li>• At the time of transfer, do you provide or receive information on known history of acute or recurrent CDI within the last 12 weeks?</li> <li>• At the time of transfer, do you provide or receive information to communicate the patient’s/resident’s risk for CDI? (i.e. recent antibiotic use, PPI use, history of CDI in the past)</li> <li>• What process do you use to notify the receiving healthcare facility before patient/resident transfer?</li> <li>• When should contact precautions be recommended to or initiated by the receiving facility?</li> <li>• Do your policies reflect that requesting a negative stool test before accepting a patient with a history of CDI, or “test of cure”, is against current recommendations?</li> </ul>	Effectively adopted?	Action Needed
<b>Strategies</b>	<ul style="list-style-type: none"> <li>• Initiate a conversation/collaborative project with a facility you frequently share patients/residents with to address ways to improve communication and care coordination</li> </ul>		
	<ul style="list-style-type: none"> <li>• Engage facilities across the care continuum as well as EMS to develop a patient transfer form that provides information to staff involved in transfer. Consider including information such as facility specific antibiogram, patient/resident history of antimicrobial medications, and CDI status as part of a patient/resident transfer chart. DHMH has sample forms you can adapt.</li> </ul>		
<b>Measurement examples</b>	<ul style="list-style-type: none"> <li>• Frequency of use of transfer form (#transfer forms received/# transfers from facility) – Survey both the sending and receiving facilities.</li> <li>• LTCF hospital admission rates for CDI</li> </ul>		

Early and Reliable Detection of Suspected/Confirmed CDI			
<b>Reflection Questions</b>	<ul style="list-style-type: none"> <li>• How are patients/residents with CDI identified?</li> <li>• When should a <i>C. diff</i> test be ordered and which staff can initiate this?</li> <li>• What type of <i>C. diff</i> testing does your lab use? Does staff know the type of CDI test used at your facility and sensitivity of that test?</li> <li>• How quickly/when does a test result come back?</li> <li>• How and to whom is the test result communicated?</li> <li>• Does the staff know how to interpret the test result?</li> <li>• When a patient/resident is suspected for CDI and a stool sample is sent, is there a process to initiate contact precautions? When are contact precautions initiated?</li> <li>• How are symptoms of CDI (3 or more unformed stools within 24 hours or an increase in baseline stool frequency) documented and communicated to staff?</li> </ul>	Effectively adopted?	Action Needed
<b>Core Strategies</b>	<ul style="list-style-type: none"> <li>• <b>Implement a lab-based alert system to ensure immediate communication of test results</b></li> </ul>		
<b>Supplemental Strategies</b>	<ul style="list-style-type: none"> <li>• Educate staff, patients, and family about CDI and prevention strategies (i.e. risk factors, when to suspect CDI)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Develop a list of risk factors for CDI and distribute to staff caring for patients/residents</li> </ul>		
	<ul style="list-style-type: none"> <li>• Assess all patients/residents with signs and symptoms of CDI and risk factors (i.e. during clinical rounds)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Assess for a past history of CDI</li> </ul>		
	<ul style="list-style-type: none"> <li>• Improve the quality of documentation of diarrheal stools (i.e. Use a standardized tool that captures consistency and frequency)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Educate staff on testing for CDI and type of test used at facility</li> </ul>		
	<ul style="list-style-type: none"> <li>• Implement standing orders that empower nurses to order CDI tests when criteria are met</li> </ul>		
	<ul style="list-style-type: none"> <li>• Work with lab to establish a policy to discourage inappropriate testing (i.e. rejection of formed stool samples, lock out of repeat testing for 7 days after the first test)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Implement a process to presumptively isolate symptomatic patients in Contact precautions as soon as CDI is suspected (patient/resident with risk factors and diarrheal episode)</li> </ul>		
<b>Measurement examples</b>	<ul style="list-style-type: none"> <li>• Collect and send unformed stools in timely fashion, ensuring appropriate collection, labeling, transport, and handling</li> </ul>		
	<ul style="list-style-type: none"> <li>• Time from documentation of third diarrheal stool to time of initiation of Contact Precautions</li> </ul>		
	<ul style="list-style-type: none"> <li>• Time from documentation of third diarrheal stool to time of order for <i>C. diff</i> testing</li> </ul>		
	<ul style="list-style-type: none"> <li>• Time from CDI lab result to time of communication of test results to front line staff</li> </ul>		
	<ul style="list-style-type: none"> <li>• Facility/unit CDI laboratory positivity rate (# positive tests/# of tests submitted)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Staff and patient knowledge of CDI symptoms, risk factors and prevention (i.e. pre-test and post-test)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Staff knowledge of when (and how to order a CDI test and interpretation of test results)</li> </ul>		

Preventing Transmission: Hand Hygiene			
<b>Reflection Questions</b>	<ul style="list-style-type: none"> <li>• Does your facility currently have a hand hygiene policy that complies with the most current CDC and/or WHO guidelines?</li> <li>• Do you regularly monitor your facility's hand hygiene compliance rates? How often and in what ways do you monitor hand hygiene compliance rates?</li> <li>• Do you share your hand hygiene compliance rates with staff?</li> <li>• Does your facility have an ongoing, consistent educational program targeted to staff and patients/visitors?</li> <li>• Are alcohol based hand rubs used in your facility? If so, are they located in locations where patient/resident care is performed?</li> <li>• Does your facility have a protocol in place for hand hygiene for patients/residents with CDI?</li> <li>• Does your staff understand which situations hand hygiene with soap and water are encouraged over alcohol based hand rub?</li> <li>• Does your facility clearly designate individuals who are responsible for stocking hand hygiene materials? (i.e. alcohol hand based rubs, soap, paper towels, gloves)</li> </ul>	Effectively adopted?	Action Needed
<b>Core Strategies</b>	<ul style="list-style-type: none"> <li>• <b>Implement hand hygiene guidelines in compliance with CDC/WHO</b></li> <li>• <b>In a setting in which there is an outbreak or an increased CDI rate, instruct visitors and healthcare workers to wash hands with soap and water after caring for or contacting patients with CDI</b></li> </ul>		
<b>Supplemental Strategies</b>	<ul style="list-style-type: none"> <li>• Provide consistent and ongoing training on hand hygiene for all staff in your facility</li> </ul>		
	<ul style="list-style-type: none"> <li>• Provide patients/residents an opportunity for hand hygiene (i.e. alcohol hand wipes for patients/residents to use at the bedside) during critical times (i.e. meal times, after toileting, prior and after group activities)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Initiate a plan to create a way to observe hand hygiene compliance including training observers, developing tools, and disseminating information. Observers can include facility staff, facility volunteers, nursing students, patients/residents, or visitors.</li> </ul>		
	<ul style="list-style-type: none"> <li>• Provide weekly, monthly, or bimonthly regular feedback to individual units/areas on their hand hygiene compliance rates. Positively reinforce high performing units</li> </ul>		
	<ul style="list-style-type: none"> <li>• Set goals for units and facility on hand hygiene rates to increase organizational accountability</li> </ul>		
	<ul style="list-style-type: none"> <li>• Provide education to patients/residents and visitors on hand hygiene.</li> </ul>		
<b>Measurement examples</b>	<p><u>Direct observation</u></p> <ul style="list-style-type: none"> <li>• Observe 25-30 patient/resident encounters every month for complete compliance with all components of hand hygiene and glove use.</li> <li>• Calculate the percentage compliance rate by dividing the number of encounters in which all components of hand hygiene is observed by the total number of observations, then multiply by 100</li> <li>• Use innovative ways to perform direct observations (i.e. training facility volunteers to perform observations)</li> </ul> <p><u>Indirect observation</u></p> <ul style="list-style-type: none"> <li>• Soap and/or alcohol hand rub consumption rates. Calculate baseline consumption and assess frequency of use after intervention</li> </ul> <p><u>Knowledge, Attitudes, Skills survey</u></p> <ul style="list-style-type: none"> <li>• Gather information on perceptions of health-care workers and senior managers</li> <li>• Health-care workers knowledge survey</li> </ul>		

Preventing Transmission: Safe and Non-Restrictive Implementation of Contact Precautions			
<b>Reflection Questions</b>	<ul style="list-style-type: none"> <li>• When and how should contact precautions be initiated?</li> <li>• When and how should contact precautions be discontinued?</li> <li>• If the patient/resident with (suspected) CDI has a roommate, how does this affect toileting (e.g. who should use the bedside commode)?</li> <li>• If patients/residents with confirmed CDI are unable to be placed in a private room, how does your facility determine cohorting practices/preference?</li> </ul>	Effectively adopted?	Action Needed
<b>Core Strategies</b>	<ul style="list-style-type: none"> <li>• <b>Contact Precautions for the duration of diarrhea</b></li> </ul>		
<b>Supplemental Strategies</b>	<ul style="list-style-type: none"> <li>• Extend the use of Contact Precautions beyond the duration of diarrhea (e.g. 48 hours)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Presumptive isolation for symptomatic patients pending confirmation of CDI</li> </ul>		
	<ul style="list-style-type: none"> <li>• Implement universal glove use on units with high CDI rates</li> </ul>		
	<ul style="list-style-type: none"> <li>• Link an isolation reminder alert to CDI test orders</li> </ul>		
	<ul style="list-style-type: none"> <li>• Ensure adequate supplies of personal protective equipment (PPE) are readily accessible to staff at all times</li> </ul>		
	<ul style="list-style-type: none"> <li>• Use visual cues to notify staff and visitors to use Contact Precautions</li> </ul>		
	<ul style="list-style-type: none"> <li>• Establish criteria for discontinuing Contact precautions</li> </ul>		
	<ul style="list-style-type: none"> <li>• Provide positive reinforcement to staff who consistently comply with all components of isolation precautions (i.e., create team competition with lunch tickets, parking, etc)</li> </ul>		
	<ul style="list-style-type: none"> <li>• Responsibility is assigned for regularly checking and restocking supplies</li> </ul>		
	<ul style="list-style-type: none"> <li>• Educate staff and visitors on use of PPE and hand hygiene</li> </ul>		
	<ul style="list-style-type: none"> <li>• Engage unit champions to support consistent application of Contact Precautions</li> </ul>		
	<ul style="list-style-type: none"> <li>• Monitor compliance with contact precautions and provide immediate one-on-one feedback</li> </ul>		
<b>Measurement examples</b>	<ul style="list-style-type: none"> <li>• Time from documentation of third diarrheal stool to the time of initiation of Contact Precautions</li> <li>• Time from documentation of last diarrheal stool to time of discontinuation of Contact Precautions</li> <li>• Indirect measures of contact precautions compliance by assessing rate of gown/glove utilization</li> <li>• Directly observe compliance to contact precautions</li> </ul>		

**Preventing Transmission: Cleaning and Disinfection of Environment and Equipment**

<b>Reflection Questions</b>	<ul style="list-style-type: none"> <li>• Does staff know the difference between cleaning and disinfecting?</li> <li>• Who cleans and disinfects what? What product do they clean and disinfect with? How do they clean and disinfect? Is this clear?</li> <li>• How are shared spaces cleaned? (i.e. PT room, beauty parlor, activities room, dining room)</li> <li>• How is shared equipment cleaned?</li> <li>• Is there a protocol/process in place for cleaning a CDI patient/resident’s room?</li> <li>• How do you evaluate EVS practice (i.e. direct observation, fluorescent markers, etc)?</li> <li>• Do you have a cleaning checklist for staff?</li> <li>• How knowledgeable is your facility’s EVS manager on CDI cleaning and disinfection?</li> <li>• Do you currently have a good collaborative, working relationship with the EVS manager at your facility?</li> </ul>	Effectively adopted?	Action Needed
<b>Core Strategies</b>	<ul style="list-style-type: none"> <li>• <b>Cleaning and disinfection of equipment and environment</b></li> </ul>		
<b>Supplemental Strategies</b>	<ul style="list-style-type: none"> <li>• Develop a policy that includes the following:                             <ul style="list-style-type: none"> <li>○ Chlorine-containing or other sporicidal product used for daily and terminal disinfection of all CDI patient/resident rooms and patient/resident care equipment</li> <li>○ Follow manufacturer recommendations for product use including proper contact time and dilution (concentration of chlorine needs to be at least 1,000ppm and ideally 5,000ppm)</li> <li>○ Clean high touch surfaces frequently</li> <li>○ Clean patient/resident care equipment after each use</li> <li>○ Evaluation of cleaning methods</li> <li>○ Responsibility is clearly assigned for “who cleans and disinfects what”</li> <li>○ Shared patient/resident care equipment is cleaned/disinfected between every use.</li> </ul> </li> <li>• Use dedicated equipment for CDI patients/residents when possible (i.e. rectal thermometers, blood pressure cuffs)</li> <li>• Provide educational training for EVS about CDI patient/resident rooms</li> <li>• Provide regular, non-punitive feedback to staff on adherence and adequacy of cleaning and disinfection</li> <li>• Develop a cleaning checklist specific to your facility for use</li> <li>• Implement a check system to determine surfaces missed when cleaning (i.e. provide specified number of bleach cloths required to clean a room and if a cloth is unused a surface was missed)</li> <li>• Develop and implement training for EVS addressing the importance of proper cleaning, facility specific procedures and protocols, what staff does well, and opportunities for improvement</li> <li>• Establish a partnership with EVS staff to monitor compliance with cleaning of patient/resident care equipment and share feedback in a timely manner</li> </ul>		
<b>Measurement examples</b>	<ul style="list-style-type: none"> <li>• Institute a monitoring process including at least one of the five listed: 1.Direct observation- direct monitoring of cleaning ; 2. Swab cultures; 3.Agar slide cultures; 4. Fluorescent markers; 5. ATP bioluminescence</li> <li>• Indirect measures (i.e. amount of wipes expected to be used for each patient room for cleaning)</li> </ul>		

**Promote Antimicrobial Stewardship\***

For more detailed Antibiotic stewardship change strategies refer to CDC/IHI Antibiotic Stewardship Driver Diagram and Change Package (2012)  
[http://www.cdc.gov/getsmart/healthcare/pdfs/Antibiotic\\_Stewardship\\_Change\\_Package\\_10\\_30\\_12.pdf](http://www.cdc.gov/getsmart/healthcare/pdfs/Antibiotic_Stewardship_Change_Package_10_30_12.pdf)

Reflection Questions		Effectively adopted?	Action Needed
Change Strategies *	<ul style="list-style-type: none"> <li>• Who reviews the laboratory results and antimicrobial susceptibilities in your facility?                             <ul style="list-style-type: none"> <li>○ Do you look at this data along with antibiotic usage pattern (help of pharmacist)?</li> <li>○ Who sees this data?</li> <li>○ Do you use this data to provide information to providers for prescribing of empiric therapy?</li> </ul> </li> <li>• Which staff member(s) does the institution currently have or need related to developing an ASP?</li> <li>• What is your IT infrastructure (e.g. CPOE, computer based surveillance for antibiotic use)?</li> <li>• Are there common clinical infectious syndromes treated at your facility (e.g. UTI, CAP, “fever”), specific pathogens, or specific antimicrobial agents that you could use as a target area?</li> </ul>		
Measurement examples	<ul style="list-style-type: none"> <li>• Engage administrative and clinical leadership to champion stewardship efforts</li> <li>• Develop a standardized process to identify patients/residents who require antibiotics</li> <li>• Create standardized protocols for ordering and obtaining cultures and other diagnostic tests prior to initiating antibiotics</li> <li>• Develop a way to inform clinicians about unnecessary combinations of antibiotics, including “double coverage”</li> <li>• Chose antibiotics based on patient/resident allergies</li> <li>• Develop a standardized process for antibiotic selection which can include local antibiograms, tailoring facility pharmacy formulary</li> <li>• Develop processes that support prompt treatment of patients requiring antibiotics</li> <li>• Ensure antibiotics are readily available</li> <li>• Incorporate evidence-based guidelines for duration of antibiotics into standard protocols and/or computerized decision support</li> <li>• Ensure a clear history of patient/resident antibiotic use is obtained and available</li> <li>• Establish a process for delivery customized to the antibiotics and the patient/resident</li> <li>• Establish a process for prompt notification of culture and antibiotic susceptibility results</li> <li>• Stop or de-escalate antibiotic based on culture result</li> <li>• Look for all opportunities to stop or change (de-escalate or broaden) antibiotic therapy when patient/resident condition changes and/or when changing levels of care</li> <li>• Ensure appropriate monitoring and adjustment of antibiotic to prevent toxicity</li> <li>• Establish real-time monitoring and measurement systems</li> <li>• Educate staff on antimicrobial stewardship</li> </ul>		
	<ul style="list-style-type: none"> <li>• Percent of patients sampled where antibiotic start date, stop date/duration and indication were documented/visible at the point of care</li> <li>• Percent of clinicians responding positively to a survey (DHMH can assist you in creating this) on their receipt or knowledge of selected antibiotic information (e.g. antibiotic utilization, antibiotic resistance, adherence to organization prescribing practices).</li> <li>• How many broad-spectrum empiric antibiotic orders are reviewed and/or changed after lab results return? What is the time between lab results and change and/or review of empiric antibiotic treatment?</li> <li>• Quantity of total antimicrobial use (e.g., in defined daily doses per 1000 patient/resident days)</li> </ul>		

Facility Name: \_\_\_\_\_

Date: \_\_\_\_\_

## RESOURCES:

APIC. (2013). Implementation Guide: Guide to the Elimination of *Clostridium difficile* in Healthcare Settings. 2013.

Alu, C. and Abu-Ghallow, E. (2012, December). Illinois Campaign to Eliminate *Clostridium difficile*. Menu of Strategies to Prevent *Clostridium difficile* infections.

Cohen SH, Gerding DN, Johnson S, Kelly CP, Loo VG, McDonald LC, et al. Clinical Practice Guidelines for *Clostridium difficile* Infection in Adults: 2010 Update by the Society for Healthcare Epidemiology of America (SHEA) and the Infectious Diseases society of America (IDSA). Infect Control Hosp Epidemiol. 2010;31:431-55.

Dubberke ER, Gerding DN. Rationale for Hand Hygiene Recommendations after Caring for a Patient with *Clostridium difficile* Infection. A Compendium of Strategies to Prevent Healthcare Associated Infections in Acute Care Hospitals. Fall 2011 Update by the Society for Healthcare Epidemiology of America (SHEA).

IHI and CDC. (2012, July). Update Antibiotic Stewardship Drivers and Change Package. Retrieved from:

[http://www.cdc.gov/getsmart/healthcare/pdfs/Antibiotic\\_Stewardship\\_Change\\_Package\\_10\\_30\\_12.pdf](http://www.cdc.gov/getsmart/healthcare/pdfs/Antibiotic_Stewardship_Change_Package_10_30_12.pdf)

Siegel JD, Rhinehart E, Jackson M, Chiarello L, and the Healthcare Infection Control Practices Advisory Committee, 2007 Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings.